

REMARKS

Claims in the case are 14-20 and 23, upon entry of this amendment. Claim 14 has been amended, and Claims 21 and 22 have been cancelled herein. No claims have been added herein. Claims 1-13 were cancelled previous to the present amendment.

Claim 14 has been amended for purposes of improved clarity, e.g., by modifying punctuation, including indentation, and including component labels (a, b and c). In addition, Claim 14 has been amended to include a portion of the subject matter of Claims 21 and 22. Accordingly, Claims 21 and 22 have been cancelled herein.

The paragraph at page 2, lines 22-25 of the specification has been amended in accordance with a request by the Examiner, as will be discussed further herein.

Applicants note with appreciation the filing and entry of their submission dated 7 May 2004, relative to their request for continued examination under 37 C.F.R. §1.114, as indicated on page 2 of the Office Action of 16 June 2004.

Claims 14-19, 21 and 23 stand rejected under 35 U.S.C. §102(a or e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as being obvious over United States Patent No. 5,998,319 or WO 97/21644 (collectively **Hintermayer**). These rejections are respectfully traversed with regard to the amendments herein and the following remarks.

Hintermayer discloses sintered silicon nitride that includes: silicon nitride; and 5 to 20 wt% of a glass component (e.g., SiO₂ and Al₂O₃), which originally had a particle size of less than 2 microns. See the abstract, and column 1, lines 62-67 of Hintermayer.

However, Hintermayer does not disclose, teach or suggest a silicon nitride material that contains an additive in the disperse phase thereof that is selected from SiC, TiN, TiCN and/or HfO₂. It is noted that the present rejection does not include Claim 22. A portion of the subject matter of Claim 22 has been incorporated into Claim 14 by amendment herein.

In light of the amendments herein and the preceding remarks, Applicants' present claims are deemed to be unanticipated by, and unobvious and patentable over Hintermayer. Reconsideration and withdrawal of these rejections is respectfully requested.

Claims 20 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hintermayer further in view of United States Patent No. 5,919,719 (Sato et al). This rejection is respectfully traversed in light of the amendments herein and the following remarks.

Sato et al disclose a silicon nitride body that contains: a beta-silicon nitride crystal phase; an oxide of a rare earth metal (e.g., an oxide of Sc, Y and La – Lu); an aluminum component (e.g., Al_2O_3); a small amount of precipitated elemental Si; and optionally 8 pbw of oxides or silicides of Mg, W, Mo, Cu and/or Fe. See the abstract; column 1, lines 65 – column 2, line 17; and column 3, lines 53-56 of Sato et al.

Hintermayer has been discussed previously herein and discloses sintered silicon nitride that includes: silicon nitride; and 5 to 20 wt% of a glass component (e.g., SiO_2 and Al_2O_3), which originally had a particle size of less than 2 microns. However, Hintermayer provides no disclosure or suggestion with regard to the presence of an oxide of a rare earth metal and/or the presence of precipitated Si in his sintered silicon nitride. Sato et al disclose as necessary components, the presence of both an oxide of a rare earth metal and precipitated Si in their silicon nitride body. As such, neither Hintermayer nor Sato et al provide the requisite disclosure that would motivate a skilled artisan to combine or otherwise modify their respective disclosures.

As the Court of Appeals for the Federal Circuit has stated, there are three possible sources for motivation to combine references in a manner that would render claims obvious. These are (1) the nature of the problem to be solved, (2) the teaching of the prior art, and (3) the knowledge of persons of ordinary skill in the art, *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1458 (Fed. Cir. 1998). The nature of the problem to be solved and the knowledge of persons of ordinary skill in the art are not present here and have not been relied upon in the rejection. As for the teaching of the prior art, the above discussion has established that neither of the patents relied

upon in the rejection provide the requisite teaching, and certainly do not provide the motivation or suggestion to combine that is required by Court decisions.

Even if Hintermayer and Sato et al were combined, Applicants' presently claimed silicon nitride material would not result from such combination. In particular, Hintermayer and Sato et al, either alone or in combination, do not disclose, teach or suggest the silicon nitride material of Applicants' present claims, which contains an additive in the disperse phase thereof that is selected from SiC, TiN, TiCN and/or HfO₂.

Applicants' presently claimed silicon nitride would not result from the combination of Hintermayer and Sato et al but for the impermissible use of hindsight reconstruction. The use of hindsight reconstruction of an invention is an inappropriate process by which to determine patentability. *In re Rouffet*, 47 U.S.P.Q.2d at 1458. One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988).

In light of the amendments herein and the preceding remarks, Applicants' claims are deemed to be unobvious and patentable over Hintermayer in view of Sato et al. Reconsideration and withdrawal of the present rejection is respectfully requested.

Claims 14-23 stand rejected under 35 U.S.C. §102(a or e) as being anticipated by, or in the alternative under 35 U.S.C. §103(a) as being unpatentable over Sato et al. These rejections are respectfully traversed in light of the amendments herein and the following remarks.

Sato et al has been discussed previously herein and discloses a silicon nitride body that contains: a beta-silicon nitride crystal phase; an oxide of a rare earth metal (e.g., an oxide of Sc, Y and La – Lu); an aluminum component (e.g., Al₂O₃); a small amount of precipitated elemental Si; and optionally 8 pbw of oxides or silicides of Mg, W, Mo, Cu and/or Fe.

Sato et al does not disclose, teach or suggest the silicon nitride material of Applicants' present claims, which includes an additive in the disperse phase thereof that is selected from SiC, TiN, TiCN and/or HfO₂.

In light of the amendments herein and the preceding remarks, Applicants' claims are deemed to be unanticipated by, and unobvious and patentable over Sato et al. Reconsideration and withdrawal of the present rejections is respectfully requested.

Claims 14-19, 21 and 23 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over United States Patent No. 5,508,241 (**Yeckley**). This rejection is respectfully traversed with regard to the amendments herein and the following remarks.

Yeckley discloses a sintered silicon nitride that is prepared using sintering aids, such as MgO and alumina. The sintered silicon of Yeckley may also include silicon in the grain boundary phase. See the abstract, and column 2, lines 3-20 of Yeckley.

Yeckley does not disclose, teach or suggest the silicon nitride material of Applicants' present claims, which includes an additive in the disperse phase thereof that is selected from SiC, TiN, TiCN and/or HfO₂. It is noted that the present rejection does not include Claim 22. A portion of the subject matter of Claim 22 has been included in Claim 14 by amendment herein, and Claims 21 and 22 have been accordingly cancelled.

In light of the amendments herein and the preceding remarks, Applicants' claims are deemed to be unanticipated by, and unobvious and patentable over Yeckley. Reconsideration and withdrawal of these rejections is respectfully requested.

Claims 14-21 and 23 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over United States Patent No. 3,836,374 (**Richerson et al**). These rejections are respectfully traversed in light of the amendments herein and the following remarks.

Richerson et al disclose a high strength hot pressed silicon nitride product that includes: silicon nitride having a controlled silica layer at the surface of the silicon nitride particles; a controlled quantity of MgO, which is used as a sintering aid; alumina; and optionally tungsten-silicon. See the abstract; column 2, lines 27-35; column 4, lines 20-25; and column 5, lines 20-24 of Richerson et al.

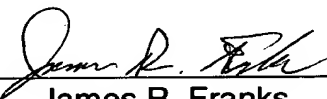
Richerson et al does not disclose, teach or suggest the silicon nitride material of Applicants' present claims, which includes an additive in the disperse phase thereof that is selected from SiC, TiN, TiCN and/or HfO₂. It is noted that the present rejection does not include Claim 22. A portion of the subject matter of Claim 22 has been included in Claim 14 by amendment herein, and Claims 21 and 22 have been accordingly cancelled.

In light of the amendments herein and the preceding remarks, Applicants' claims are deemed to be unanticipated by, and unobvious and patentable over Richerson et al. Reconsideration and withdrawal of these rejections is respectfully requested.

On page 8 of the Office Action of 16 June 2004, correction of the formula for the silicon oxynitride compound on page 2 of the specification is required. The paragraph at page 2, lines 22-25 of the specification has been amended herein to replace "SiO₂N₂O" with --Si₂N₂O-- (in particular at page 2, line 25 of the specification). In light of the amendment to the specification herein, the Examiner's request in Item-8 on page 4 of the Office Action is deemed to have been fully addressed.

In light of the amendments herein and the preceding remarks, Applicants' presently pending claims are deemed to define an invention that is unanticipated, unobvious and hence, patentable. Reconsideration of the rejections and allowance of all of the presently pending claims is respectfully requested.

Respectfully submitted,

By 
James R. Franks
Agent for Applicants
Reg. No. 42,552

Bayer MaterialScience LLC
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-3808
FACSIMILE PHONE NUMBER:
(412) 777-3902
lo/FRANKS/jrf177